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| APPLICATION NO. | FILING DATE | FIRST NAMED INVENTOR | ATTORNEY DOCKET NO. | CONFIRMATION NO. |
|-----------------|-------------|----------------------|---------------------|------------------|
| 09/889,926      | 09/18/2001  | Qi Xie               | 2577-115            | 5748             |

6449 7590 12/17/2003

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EXAMINER

BAUM, STUART F

|          |              |
|----------|--------------|
| ART UNIT | PAPER NUMBER |
|----------|--------------|

1638

DATE MAILED: 12/17/2003

Please find below and/or attached an Office communication concerning this application or proceeding.

|                              |                        |                     |  |
|------------------------------|------------------------|---------------------|--|
| <b>Office Action Summary</b> | <b>Application No.</b> | <b>Applicant(s)</b> |  |
|                              | 09/889,926             | XIE ET AL.          |  |
|                              | <b>Examiner</b>        | <b>Art Unit</b>     |  |
|                              | Stuart F. Baum         | 1638                |  |

**-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --**

**Period for Reply**

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

**Status**

- 1) ☒ Responsive to communication(s) filed on 10 September 2003.
- 2a) ☒ This action is **FINAL**.                      2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

**Disposition of Claims**

- 4) ☒ Claim(s) 1-7 and 11-23 is/are pending in the application.
- 4a) Of the above claim(s) 2 and 3 is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 1, 4-7, and 11-23 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

**Application Papers**

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on \_\_\_\_\_ is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

**Priority under 35 U.S.C. §§ 119 and 120**

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).  
a) ☐ All   b) ☐ Some \* c) ☐ None of:  
1. ☐ Certified copies of the priority documents have been received.  
2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.  
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).  
\* See the attached detailed Office action for a list of the certified copies not received.
- 13) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e) (to a provisional application) since a specific reference was included in the first sentence of the specification or in an Application Data Sheet. 37 CFR 1.78.  
a) ☐ The translation of the foreign language provisional application has been received.
- 14) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121 since a specific reference was included in the first sentence of the specification or in an Application Data Sheet. 37 CFR 1.78.

**Attachment(s)**

- |  |   |
|--|---|
| 1) <input type="checkbox"/> Notice of References Cited (PTO-892)                             | 4) <input type="checkbox"/> Interview Summary (PTO-413) Paper No(s). _____  |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948)         | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152) |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO-1449) Paper No(s) _____ | 6) <input type="checkbox"/> Other: _____                                    |

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### **DETAILED ACTION**

1. The amendment filed 9/10/2003 has been entered.

Claims 1-7, 11-23 are pending.

Claims 2-3 have been withdrawn from consideration because the claims are drawn to non-elected inventions.

Claims 8-10 have been canceled.

Claims 20-23 have been newly added.

2. Claims 1, 4-7, and 11-23 are examined in the present office action.
3. Rejections and objections not set forth below are withdrawn.
4. The text of those sections of Title 35, U.S. Code not included in this office action can be found in a prior office action.

### ***Indefiniteness***

5. Claims 4-7, 11-19, and 21-23 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

In claim 4, line 2, insert the word --sequence-- before "identical" to better clarify Applicants' invention.

In claim 4, line three, replace "a" with --said--, to better clarify Applicants' invention.

In claim 4, line four, replace the second "a" with --said--, to better clarify Applicants' invention.

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In claim 4, lines three and four, delete both recitations of the phrase “encoding the protein” to better clarify Applicants’ invention.

Where applicant acts as his or her own lexicographer to specifically define a term of a claim contrary to its ordinary meaning, the written description must clearly redefine the claim term and set forth the uncommon definition so as to put one reasonably skilled in the art on notice that the applicant intended to so redefine that claim term. *Process Control Corp. v. HydReclaim Corp.*, 190 F.3d 1350, 1357, 52 USPQ2d 1029, 1033 (Fed. Cir. 1999). The phrase “which is transgenic for the nucleic acid” in claims 5 and 6 are believed to mean “that the plant is transformed with the nucleic acid”. The phrase is indefinite because it is unclear how a plant can be transgenic for a nucleic acid. This rejection is maintained for the reasons of record as set forth above and set forth in the Official action mailed 4/10/2003. Applicants amended the claim and did not file any arguments as to why the problem was not corrected.

Claim 11 is indefinite for the recitation “transgenic for NAC1”. See 112 2<sup>nd</sup> rejection for claims 5 and 6. All subsequent recitations of “transgenic for NAC1” are also rejected.

Claim 11 is indefinite because the preamble and the body of the claim do not coincide. The preamble states “A method of growing a plant” and the body of the claim recites steps to grow the transgenic plant larger than a plant not transformed with NAC1. The Examiner suggests the following preamble; “A method of increasing the growth of a plant”.

In claim 15, line four, insert the word --sequence-- before “identical” to better clarify Applicants’ invention.

In claim 15, line five, replace “a” with --said--, to better clarify Applicants’ invention.

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In claim 15, line six, replace the second “a” with --said--, to better clarify Applicants’ invention.

In claim 15, lines six and seven, delete both recitations of the phrase “expressing the protein” to better clarify Applicants’ invention.

Claim 19 is indefinite for the recitation “transgenic for said nucleic acid”. See 112 2<sup>nd</sup> rejection for claims 5 and 6. All subsequent recitations of “transgenic for said nucleic acid” or “transgenic for the nucleic acid” are also rejected.

Claim 23 is indefinite because the preamble and the body of the claim do not coincide. The preamble states “A method of growing a plant” and the body of the claim recites steps to grow the transgenic plant larger than a plant not transformed with SEQ ID NO:2. The Examiner suggests the following preamble; “A method of increasing the growth of a plant”.

Claim 23 is indefinite for the recitation “transgenic for”. See 112 2<sup>nd</sup> rejection for claims 5 and 6.

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***Written Description***

6. Claims 4-7, and 11-19 are rejected under 35 U.S.C. 112, first paragraph, as containing subject matter which was not described in the specification in such a way as to reasonably convey to one skilled in the relevant art that the inventor(s), at the time the application was filed, had possession of the claimed invention. This rejection is maintained for the reasons of record set forth in the Official action mailed 4/10/2003. Applicant's arguments filed 9/10/2003 have been fully considered but they are not persuasive.

Applicants contend that the amended claims recite specific structural and physical and/or chemical properties and also recite functional properties for the claimed nucleic acids.

The Office contends that Applicants have fulfilled the written description requirement for claims drawn to nucleic acids encoding SEQ ID NO:2 by submitting the nucleic acid sequence of SEQ ID NO:1 encoding the amino acid sequence of SEQ ID NO:2. But, for claims that are drawn to nucleic acid sequences encoding an amino acid sequence exhibiting 70% amino acid sequence identity to SEQ ID NO:2, Applicants' disclosed sequence does not fulfill the written description requirement. In addition, Applicants do not disclose any specific structural, physical and/or chemical properties for the claimed broad genus of sequences. Applicants do not present a description of domains that are specific to SEQ ID NO:2, or that are conserved in all 70% variants of SEQ ID NO:2 and which are correlated with NAC1 specific function, and as such, one skilled in the art would not recognize that Applicant was in possession of the claimed genus of 70% sequence and NAC1 at the time of filing. See MPEP 2163.

*Enablement*

7. Claims 4-7, and 11-19 are rejected under 35 U.S.C. 112, first paragraph, because the specification, while being enabling for an isolated nucleic acid molecule comprising bases 89-1060 of SEQ ID NO:1 or isolated nucleic acid molecules encoding SEQ ID NO:2, and plant transformation therewith, to obtain plants with increased mass which was due to thicker leaves, thicker stems and more roots, does not reasonably provide enablement for claims drawn to a nucleic acid encoding a protein exhibiting at least 70% sequence identity to SEQ ID NO:2 including plant transformation therewith to obtain plants with increased mass and Applicant is not enabled for a method of growing a plant, method of growing a transgenic plant and method of growing a transgenic plant larger than a non-transformed plant, all of which comprise transforming a plant with a NAC1, or a nucleic acid encoding a protein exhibiting at least 70% sequence identity to SEQ ID NO:2. The specification does not enable any person skilled in the art to which it pertains, or with which it is most nearly connected, to make and/or use the invention commensurate in scope with these claims. This rejection is maintained for the reasons of record set forth in the Official action mailed 4/10/2003. Applicant's arguments filed 9/10/2003 have been fully considered but they are not persuasive.

Applicants contend that the claims have been amended to recite nucleic acids which encode proteins with the recited identity and the same activity as the proteins of SEQ ID NO:2, i.e., forming dimers, binding to the same site as NAC1, and causing a plant transformed with said nucleic acid to grow larger. Applicants contend that the claims recite a nucleic acid encoding a protein that is NAC1 as in SEQ ID NO:2 or a protein that has the same function. Applicants contend that CUC1 which contains a NAC domain, is a member of the NAC gene

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family which contains various distinct genes and sub-families that are conserved at the N-terminus only. Applicants respectfully submit that CUC1 and NAC1 are distinct polypeptides and the effects seen with overexpression of one polypeptide or protein cannot support an assertion that the phenotype associated with another polypeptide or protein will be unpredictable as is disclosed in the Takeda et al reference cited by the Examiner. Applicants contend that it is the Examiner's burden to provide sufficient technical reasons as to why a claim is not enabled (page 6, bottom paragraph).

Applicants' claims drawn to nucleic acid sequences encoding a protein exhibiting at least 70% sequence identity to SEQ ID NO:2 and can form dimers, bind to the same DNA binding sites as NAC1 and cause plants transformed with said nucleic acid to grow larger compared to an untransformed plant are not enabled. Applicants have not taught a nucleic acid sequence encoding a polypeptide exhibiting 70% sequence identity to SEQ ID NO:2, and can form dimers, bind to the same DNA binding sites as NAC1 and that when transformed into a plant increases the growth of said plant. Applicants have only taught the use of the full length sequence and has not specified the regions of nucleic acids encoding SEQ ID NO:2 that are important for the function of the NAC1 protein. Applicants have not taught the amino acid sequences that are important for forming dimers, or for binding to the NAC1 DNA binding consensus sequence. Applicant does not teach which region(s) must be retained for desired activity, and which region(s) can tolerate unspecified additions, substitutions and or deletions. The Office contends that the Takeda et al reference teaches a CUC1 protein that is in the same family as NAC1, and which shares certain functional motifs. Given Applicants broadly claimed invention, i.e., plants transformed with a nucleic acid encoding a NAC1, and given that Applicants have not defined a



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NAC1 polypeptide in relation to a specific DNA sequence, the CUC1 protein of Takeda et al can be interpreted to be a type of NAC1 polypeptide, and as such, transforming a plant with a nucleic acid encoding said protein produces unexpected results.

8. Claim 1 and 20 are allowable. SEQ ID NO:1 encoding SEQ ID NO:2 is deemed free of the prior art, given the failure of the prior art to teach or reasonably suggest an isolated polynucleotide of SEQ ID NO:1 encoding SEQ ID NO:2.

9. Claims 21 and 22 would be allowable if rewritten to overcome the rejection(s) under 35 U.S.C. 112, second paragraph, set forth in this Office action and to include all of the limitations of the base claim and any intervening claims.

10. Applicant's amendment necessitated the new ground(s) of rejection presented in this Office action. Accordingly, **THIS ACTION IS MADE FINAL**. See MPEP § 706.07(a). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event,

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however, will the statutory period for reply expire later than SIX MONTHS from the date of this final action.

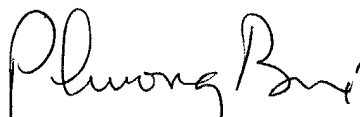
11. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Stuart F. Baum whose telephone number is 703-305-6997. The examiner can normally be reached on M-F 8:30-5:00.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Amy Nelson can be reached on 703-306-3218. The fax phone number for the organization where this application or proceeding is assigned is (703) 872-9306.

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the receptionist whose telephone number is 703-308-0196.

Stuart F. Baum Ph.D.

December 11, 2003

  
PHUONG T. BUI 12/12/03  
PRIMARY EXAMINER